UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/667,900	09/22/2000	Adam I. Pinard	I0001-009001	1242

7590 02/22/2006

Kristofer E Elbing
187 Pelham Island Road
Wayland, MA 01778

EXAMINER	
THOMPSON, JAMES A	

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/667,900	PINARD ET AL.	
	Examiner	Art Unit	
	James A. Thompson	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 December 2005 and 05 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 September 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05 December 2005 has been entered.

Response to Arguments

2. Applicant's arguments filed 05 October 2005 have been fully considered but they are not persuasive. Applicant's arguments have been fully addressed in the Advisory Action dated 02 November 2005 and mailed 10 November 2005. The present amendments to the claims have been fully considered and are addressed in the prior art rejection given below.

Information Disclosure Statement

3. The information disclosure statement filed 05 November 2004 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Specifically, there are no copies of any of the foreign references listed in the Information Disclosure Statement filed 05 November 2004.

Specification

4. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 17-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Spence (US Patent 5,333,069).

Regarding claim 17: Spence discloses a proof generation apparatus for proof printers (figure 1 of Spence), comprising a primary color print data input (figure 1(100→110) and column 13, lines 31-32 of Spence) responsive to a first halftone processor (figure 1(110) of Spence) employing a first halftoning technique (column 13, lines 31-35 of Spence), wherein the first halftoning technique is at least comparable to a target halftoning technique used by the target halftone printing press (figure 1 (168) of Spence) (column 13, lines 35-38 and lines 42-45 of Spence). The set of digital color separations (figure 1(110) of Spence) is a halftone technique since the color separated data

is used directly in direct digital color proofing (column 13, lines 35-39 and lines 42-45 of Spence). Said digital color separations are used in forming the set of halftone separations (figure 1(120) of Spence) (column 13, lines 42-45 of Spence), so said digital color separations is at least comparable to said halftone separations.

Spence further discloses a second halftone processor (figure 1(120) of Spence) employing a second halftone technique (column 13, lines 42-50 of Spence), wherein the first and second halftoning techniques are different (column 13, lines 45-54 of Spence). Since said halftone separations, which are formed by the second halftoning technique, are used for a different printing system (figure 1(160) of Spence) than said digital color separations (column 13, lines 45-50 of Spence), then said second halftoning technique must inherently be different from the first halftoning technique.

Spence further discloses a processed primary color print data output (figure 1(153) of Spence) (column 14, lines 32-40 of Spence).

Regarding claim 18: Spence discloses a proof generation apparatus for proof printers (figure 1 of Spence), comprising means for receiving primary color print data(figure 1(100→110) and column 13, lines 31-32 of Spence) to be printed on a target halftone printing press from means for applying a first halftoning technique to the print data (column 13, lines 31-35 of Spence), wherein the first halftoning technique is at least comparable to a target halftoning technique used by the target halftone printing press (figure 1(168) of Spence) (column 13, lines 35-38 and lines 42-45 of Spence). The set of digital color separations (figure 1(110) of Spence) is a halftone

technique since the color separated data is used directly in direct digital color proofing (column 13, lines 35-39 and lines 42-45 of Spence). Said digital color separations are used in forming the set of halftone separations (figure 1(120) of Spence) (column 13, lines 42-45 of Spence), so said digital color separations is at least comparable to said halftone separations.

Spence further discloses means for applying a second halftone technique to the print data (figure 1(120) and column 13, lines 42-50 of Spence), wherein the first and second halftoning techniques are different (column 13, lines 45-54 of Spence). Since said halftone separations, which are formed by the second halftoning technique, are used for a different printing system (figure 1(160) of Spence) than said digital color separations (column 13, lines 45-50 of Spence), then said second halftoning technique must inherently be different from the first halftoning technique.

Spence discloses further discloses means (figure 1(110) of Spence) for providing the data to a proofing printer (figure 1 (140) of Spence) different from the target halftone printing press (figure 1(168) of Spence). Said target halftone printing press uses a separate halftoning technique to form image data and a set of printing plates (column 13, lines 45-50 of Spence) in order to form the printed images (column 13, lines 50-54 of Spence). Said proofing printer uses a direct digital color proofing method (column 13, lines 42-43 of Spence). Therefore, said printing proofer and said target halftone printing press are different.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 3, 7-9, 11, 14, 19-26, 28-29 and 31-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spence (US Patent 5,333,069) in view of Rylander (US Patent 5,602,572).

Regarding claim 1: Spence discloses receiving primary color print data(figure 1(100→110) and column 13, lines 31-32 of Spence) to be printed on a target halftone printing press (figure 1(168) of Spence), wherein the halftoned primary color print data has been produced by a first halftoning technique (column 13, lines 31-35 of Spence), wherein the first halftoning technique is at least comparable to a target halftoning technique used by the target halftone printing press (column 13, lines 35-38 and lines 42-45 of Spence). The set of digital color separations (figure 1(110) of Spence) is a halftone technique since the color separated data is used directly in direct digital color proofing (column 13, lines 35-39 and lines 42-45 of Spence). Said digital color separations are used in forming the set of halftone separations (figure 1(120) of Spence) (column 13, lines 42-45 of Spence), so said digital color separations is at least comparable to said halftone separations.

Spence further discloses applying a second halftone technique to the print data (figure 1(120) and column 13, lines 42-50 of Spence), wherein the first and second halftoning techniques are different (column 13, lines 45-54 of Spence). Since said halftone separations, which are formed by the second halftoning technique, are used for a different printing system (figure 1(160) of Spence) than said digital color separations (column 13, lines 45-50 of Spence), then said second halftoning technique must inherently be different from the first halftoning technique.

Spence discloses further discloses providing the data to a proofing printer (figure 1(140) of Spence) different from the target halftone printing press (figure 1(168) of Spence). Said target halftone printing press uses a separate halftoning technique to form image data and a set of printing plates (column 13, lines 45-50 of Spence) in order to form the printed images (column 13, lines 50-54 of Spence). Said proofing printer uses a direct digital color proofing method (column 13, lines 42-43 of Spence). Therefore, said printing proofer and said target halftone printing press are different.

Spence does not disclose expressly that the first and second halftoning techniques are selected to cause a dot size in the data provided to the proofing printer to more closely match a dot size for the halftone printing press than would a dot size resulting from the first halftoning technique alone.

Rylander discloses applying a first halftoning technique (figure 5(left side) of Rylander) and a second halftoning technique (figure 5(right side) of Rylander) to input data (column 6, lines 29-40 of Rylander) such that the dot size in the data provided to a printer more closely matches the dot size

for an accurate halftone printing output than would a dot size resulting from the first halftoning technique alone (column 5, lines 17-18 and lines 38-45 of Rylander). By applying a first halftoning technique (basic halftoning as shown in figure 5(left side) of Rylander) and a second halftoning technique (thinned halftoning as shown in figure 5(right side) of Rylander) to the input data (column 6, lines 29-40 of Rylander), the problems with the dot size (column 5, lines 38-45 of Rylander) that occur due to over-inking, such as ink smearing (column 5, lines 17-18 of Rylander) are mitigated. Since ink smearing is decreased, the dot size will better match the proper value than if the ink smearing were allowed, which would occur if only the first halftoning technique were used.

Spence and Rylander are combinable because they are from the same field of endeavor, namely digital image data halftoning and processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply a thinning halftone technique in addition to the basic halftoning technique, as taught by Rylander. By selecting the two halftoning techniques taught by Rylander and applying them to the system of Spence, this would result causing a dot size in the data provided to the proofing (ink jet in Rylander) printer to more closely match a dot size for the halftoning printing press than would a dot size resulting from the first halftoning technique alone. The motivation for doing so would have been to enable higher addressability for an inkjet printer while preventing problems of over-inking that tend to occur in inkjet printing (column 2, lines 28-34 of Rylander). Therefore, it would have been obvious to combine Rylander with Spence to obtain the invention as specified in claim 1.

Regarding claim 3: Spence discloses that the print data are color print data (column 13, lines 39-41 of Spence) including a plurality of color-separated data subsets (column 13, lines 39-45 of Spence) and wherein the step of applying a first halftoning technique and the step of applying a second halftoning technique are applied to the data subsets (column 13, lines 42-45 of Spence).

Regarding claim 7: Spence discloses the steps of receiving a target printing press selection command (column 25, line 67 to column 26, line 4 of Spence) and selecting parameters for the second halftoning technique based on the target printing press selection command (column 26, lines 5-10 of Spence). The colorimetric data for the target image is obtained and managed by the user (column 26, lines 2-4 of Spence) which works in conjunction with a selection of the target printing press (column 26, lines 4-5 of Spence). The colorimetric and densitometric data for proofing is also managed by the user (column 26, lines 5-10 of Spence). Management of the colorimetric and densitometric data inherently includes selecting parameters for the second halftoning technique since said second halftoning technique is needed to make a proof and the target image (column 13, lines 45-54 of Spence).

Regarding claim 8: Spence discloses applying a first halftoning technique and applying a second halftoning technique are applied as part of a single simultaneous process (column 13, lines 42-45 of Spence). The digital separation processing (figure 1(110) of Spence) is used to produce the set of halftone separations (figure 1(120) of Spence) for the printing press (figure 1(168) of Spence) (column 13, lines 42-45 of Spence). Both said digital separation processing and said halftone

separation processing are inherently performed pixel-by-pixel. Once the digital separation pixel is calculated, the halftone pixel can be calculated before the result is sent to the target printer (column 13, lines 45-54 of Spence). Therefore, the first and second halftoning techniques are applied as part of a single simultaneous process.

Regarding claim 9: Spence discloses including the step of printing the data with a proofing printer different from the target halftone printing press (figure 1(153) of Spence) (column 14, lines 32-40 of Spence).

Spence does not disclose expressly that said proofing printer is an ink jet printer.

Rylander discloses printing using ink jet printers (column 4, lines 32-36 of Rylander).

Spence and Rylander are combinable because they are from the same field of endeavor, namely digital image data halftoning and processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use an ink jet printer for a proofing printer. The suggestion for doing so would have been that inkjet printers are an alternate means by which halftone dots are printed. Furthermore, as is well-known in the art, inkjet printers are cheaper and more readily available than most other printers, such as laserjet printers. Therefore, it would have been obvious to combine Rylander with Spence to obtain the invention as specified in claim 9.

Regarding claim 19: Spence discloses receiving print data to be printed on a target halftone printing press to which a first halftoning technique has been applied to obtain screen image data representing a plurality of screen dots (figure 1

(100→110) and column 13, lines 31-39 of Spence), which yield a shaded visual representation of the image when printed on a printing press (column 19, lines 9-13 of Spence). When the plurality of dots initially created by the first halftoning technique (column 13, lines 31-39 of Spence) are printed on the printing press, the highlights are bright and the shadows are dark (column 19, lines 9-13 of Spence), thus creating a shaded visual representation.

Spence further discloses creating one or more lightened areas where direct deposition of colorant is to be lightened within at least some of the screen dots to be printed (column 19, lines 3-6 and lines 9-13 of Spence) but where indirect deposition colorant from overlapping areas is to remain (column 19, lines 11-12 of Spence), and wherein the apparatus is optimized to accurately reproduce a shaded visual image that would be printed on the printing press (column 19, lines 3-9 of Spence). Matching for a lightness value (column 19, lines 3-6 of Spence) is used to preserve the overall contrast (column 19, lines 9-13 of Spence), which would generally require the lightening of at least some of the screen dots to be printed. The highlight regions are made to appear bright in order to maintain the contrast of the original image (column 19, lines 9-13 of Spence). Therefore, the direct deposition of colorant is lightened. A shadow region inherently has overlapping halftone dots due to the high density level of said shadow region. The shadow regions are made to appear dark in order to maintain the contrast of the original image (column 19, lines 9-13 of Spence). Therefore, the indirect deposition of colorant from overlapping areas is to remain.

Spence further discloses providing the data to a proofing printer different from the target halftone printing press (figure 1(153) of Spence) (column 14, lines 32-40 of Spence) and capable of printing the overlapping areas (column 19, lines 3-12 of Spence).

Spence does not disclose expressly that said direct deposition of colorant is to be lightened inside the edge of at least some of said screen dots to be printed; that said indirect deposition colorant from overlapping areas is to remain by refraining from printing a subset of pixels within the periphery of a dot; and that said proof printers are ink jet printers.

Rylander discloses that direct deposition of colorant is to be lightened inside the edge of at least some of said screen dots to be printed (figure 5 and column 6, lines 36-40 of Rylander); that said indirect deposition colorant from overlapping areas is to remain by refraining from printing a subset of pixels within the periphery of a dot (figure 9 and column 7, lines 45-50 of Rylander); and printing using ink jet printers (column 4, lines 32-36 of Rylander). The inside of the dot is lightened ("thinned"), whereas the edge of the dot is not lightened ("unthinned") (column 6, lines 36-40 of Rylander).

Spence and Rylander are combinable because they are from the same field of endeavor, namely digital image data halftoning and processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use an ink jet printer for a proofing printer. The suggestion for doing so would have been that inkjet printers are an alternate means by which halftone dots are printed. Furthermore, as is well-known in the art, inkjet printers are cheaper and more readily available than most other printers, such as laserjet

printers. Additionally, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to thin the inside of a halftone dot without thinning the edge of the halftone dot. The motivation for doing so would have been to enable higher addressability for an inkjet printer while preventing problems of over-inking that tend to occur in inkjet printing (column 2, lines 28-34 of Rylander). Therefore, it would have been obvious to combine Rylander with Spence to obtain the invention as specified in claim 19.

Regarding claim 20: Spence discloses a step of receiving an adjustment signal (column 25, lines 50-54 of Spence) and a step of adjusting parameters of the step of lightening in response to the step of receiving a user adjustment signal (column 26, lines 5-10 of Spence). The user controls colorimetric and densitometric data for the proof image (column 26, lines 5-10 of Spence). Said user control would inherently include, either through direct manipulation or manipulation of related factors, the adjustment of the lightening.

Regarding claim 21: Spence discloses printing the data using a proofing printer (figure 1(140) of Spence) different from the target halftone printing press (figure 1(168) of Spence). Said target halftone printing press uses a separate halftoning technique to form image data and a set of printing plates (column 13, lines 45-50 of Spence) in order to form the printed images (column 13, lines 50-54 of Spence). Said proofing printer uses a direct digital color proofing method (column 13, lines 42-43 of Spence). Therefore, said printing proofer and said target halftone printing press are different.

Spence does not disclose expressly that the data is printed with overlapping dots for the overlapping raster pattern; and that said proofing printer is an ink jet proofing printer.

Rylander discloses that the data is printed with overlapping dots for the overlapping raster pattern (column 5, lines 31-39 of Rylander); and printing using ink jet printers (column 4, lines 32-36 of Rylander).

Spence and Rylander are combinable because they are from the same field of endeavor, namely digital image data halftoning and processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use an ink jet printer for a proofing printer, said inkjet printer printing the data with overlapping dots. The suggestion for doing so would have been that inkjet printers are an alternate means by which halftone dots are printed and overlapping dots generally occur while printing data using a halftone printer (column 5, liens 31-39 of Rylander). Furthermore, as is well-known in the art, inkjet printers are cheaper and more readily available than most other printers, such as laserjet printers. Therefore, it would have been obvious to combine Rylander with Spence to obtain the invention as specified in claim 21.

Regarding claim 22: Spence discloses that the lightness of the image is matched (column 19, lines 3-6 and lines 9-13 of Spence), thus creating some areas that are lightened, such as highlight areas (column 19, lines 9-13 of Spence). Therefore, the individual pixels must inherently be processed in order to match the lightness. Thus, the step of creating creates the lightened areas as individual pixels.

Regarding claim 23: Spence does not disclose expressly that the steps of creating and providing are adapted to produce complete overlap of the lightened areas.

Rylander discloses producing complete overlap (column 5, lines 35-39 of Rylander) of the lightened areas (figure 9 and column 7, lines 41-48 of Rylander). Higher density dots are thinned more since more thinning is required to prevent over-inking for higher density dots (figure 9; column 5, lines 35-39; and column 7, lines 41-48 of Rylander). Thus, complete overlap is produced for lightened areas, such as the higher density dots.

Spence and Rylander are combinable because they are from the same field of endeavor, namely digital image data halftoning and processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to produce complete overlap of the lightened areas, as taught by Rylander. The motivation for doing so would have been to save ink since ink does not need to be transmitted through a cell when ink is already overlapping the cell. Therefore, it would have been obvious to combine Rylander with Spence to obtain the invention as specified in claim 23.

Regarding claims 24 and 25: Spence discloses a proof generation apparatus for proof printers (figure 1 of Spence), comprising a print data input (figure 1(100→110) of Spence) responsive to a series of screen dots from first halftone processor (figure 1(110) of Spence) employing a first halftoning technique (column 13, lines 31-39 of Spence), wherein the plurality of dots yield a shaded visual representation of the image when printed on a printing press (column 19, lines 9-13 of Spence). When the plurality of dots initially created by the

first halftoning technique (column 13, lines 31-39 of Spence) are printed on the printing press, the highlights are bright and the shadows are dark (column 19, lines 9-13 of Spence), thus creating a shaded visual representation.

Spence further discloses embodied lightening logic (figure 1(180) of Spence) for creating one or more lightened areas where direct deposition of colorant is to be lightened within at least some of the screen dots to be printed (column 19, lines 3-6 and lines 9-13 of Spence) but where indirect deposition colorant from overlapping areas is to remain (column 19, lines 11-12 of Spence), and wherein the apparatus is optimized to accurately reproduce a shaded visual image that would be printed on the printing press (column 19, lines 3-9 of Spence). Matching for a lightness value (column 19, lines 3-6 of Spence) is used to preserve the overall contrast (column 19, lines 9-13 of Spence), which would generally require the lightening of at least some of the screen dots to be printed. The highlight regions are made to appear bright in order to maintain the contrast of the original image (column 19, lines 9-13 of Spence). Therefore, the direct deposition of colorant is lightened. A shadow region inherently has overlapping halftone dots due to the high density level of said shadow region. The shadow regions are made to appear dark in order to maintain the contrast of the original image (column 19, lines 9-13 of Spence). Therefore, the indirect deposition of colorant from overlapping areas is to remain.

Spence further discloses a processed print data output for providing the data to a proofing printer different from the target halftone printing press (figure 1(153) of Spence) (column

14, lines 32-40 of Spence) and capable of printing the overlapping areas (column 19, lines 3-12 of Spence).

Spence does not disclose expressly that said direct deposition of colorant is to be lightened inside the edge of at least some of said screen dots to be printed; and that said proof printers are ink jet printers.

Rylander discloses that direct deposition of colorant is to be lightened inside the edge of at least some of said screen dots to be printed (figure 5 and column 6, lines 36-40 of Rylander); and printing using ink jet printers (column 4, lines 32-36 of Rylander). The inside of the dot is lightened ("thinned"), whereas the edge of the dot is not lightened ("unthinned") (column 6, lines 36-40 of Rylander).

Spence and Rylander are combinable because they are from the same field of endeavor, namely digital image data halftoning and processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use an ink jet printer for a proofing printer. The suggestion for doing so would have been that inkjet printers are an alternate means by which halftone dots are printed. Furthermore, as is well-known in the art, inkjet printers are cheaper and more readily available than most other printers, such as laserjet printers. Additionally, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to thin the inside of a halftone dot without thinning the edge of the halftone dot. The motivation for doing so would have been to enable higher addressability for an inkjet printer while preventing problems of over-inking that tend to occur in inkjet printing (column 2, lines 28-34 of Rylander). Therefore, it

would have been obvious to combine Rylander with Spence to obtain the invention as specified in claims 24 and 25.

Further regarding claim 25: The units of the apparatus of claim 24 provide the corresponding means of the apparatus of claim 25.

Regarding claims 26 and 33: Spence discloses a proof generation apparatus for proof printers (figure 1 of Spence), comprising means for receiving print data (figure 1(100→110) of Spence) to be printed on a target halftone printing press (figure 1(168) of Spence) to which a first halftone technique has been applied (column 13, lines 31-35 of Spence), wherein the first halftoning technique is at least comparable to a target halftoning technique used by the target halftone printing press (column 13, lines 35-38 and lines 42-45 of Spence). The set of digital color separations (figure 1(110) of Spence) is a halftone technique since the color separated data is used directly in direct digital color proofing (column 13, lines 35-39 and lines 42-45 of Spence). Said digital color separations are used in forming the set of halftone separations (figure 1(120) of Spence) (column 13, lines 42-45 of Spence), so said digital color separations is at least comparable to said halftone separations.

Spence further discloses means (figure 3(320(associated embodied code)) of Spence) for lightening at least one portion of each of at least some of the screen dots (column 19, lines 3-6 of Spence). Since the appearance match proofer calibration system (figure 1(180) of Spence) matches for the lightness coordinate of the image (column 19, lines 3-6 of Spence), then in general said calibration system will lighten at least one portion of each of at least some of the screen dots.

Spence further discloses means (figure 3(320(associated embodied code)) of Spence) for adding at least one region of a second color in some of the screen dots (column 19, lines 6-9 of Spence). Since said calibration system matches for the hue angle (column 19, lines 6-9 of Spence), at least one region of a second color will be added in some of the screen dots in order to correct the hue of the proofing image.

Spence further discloses means (figure 1(110) of Spence) for providing the screen image data to a proofing printer (figure 1(140) of Spence) different from the target halftone printing press (figure 1(168) of Spence). Said target halftone printing press uses a separate halftoning technique to form image data and a set of printing plates (column 13, lines 45-50 of Spence) in order to form the printed images (column 13, lines 50-54 of Spence). Said proofing printer uses a direct digital color proofing method (column 13, lines 42-43 of Spence). Therefore, said printing proofer and said target halftone printing press are different.

Spence does not disclose expressly lightening at least one portion of each of at least some of the screen dots *inside their edges;* and that said proof printers are ink jet printers.

Rylander discloses lightening at least one portion of each of at least some of the screen dots inside their edges (figure 5 and column 6, lines 36-40 of Rylander); and printing using ink jet printers (column 4, lines 32-36 of Rylander). The inside of the dot is lightened ("thinned"), whereas the edge of the dot is not lightened ("unthinned") (column 6, lines 36-40 of Rylander).

Spence and Rylander are combinable because they are from the same field of endeavor, namely digital image data halftoning and processing. At the time of the invention, it would have

been obvious to a person of ordinary skill in the art to use an ink jet printer for a proofing printer. The suggestion for doing so would have been that inkjet printers are an alternate means by which halftone dots are printed. Furthermore, as is well-known in the art, inkjet printers are cheaper and more readily available than most other printers, such as laserjet printers. Additionally, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to thin the inside of a halftone dot without thinning the edge of the halftone dot. The motivation for doing so would have been to enable higher addressability for an inkjet printer while preventing problems of over-inking that tend to occur in inkjet printing (column 2, lines 28-34 of Rylander). Therefore, it would have been obvious to combine Rylander with Spence to obtain the invention as specified in claims 26 and 33.

Further regarding claim 26: The apparatus of claim 33 performs the method of claim 26.

Regarding claim 28: Spence discloses including the step of printing the data with a proofing printer different from the target halftone printing press (figure 1(153) of Spence) (column 14, lines 32-40 of Spence). As discussed in the arguments regarding claims 26 and 33, said proofing printer is an ink jet proofing printer.

Regarding claims 11 and 29: Spence discloses that the step of applying a first halftoning technique employs dots (column 13, lines 35-38 of Spence). As is well-known in the art, halftone screening employs dots.

Spence does not disclose expressly that the step of applying a second halftoning technique causes the complete

lightening of colorant values for at least some areas of at least some of the dots from the first halftoning technique.

Rylander discloses causing the complete lightening of colorant values for at least some areas of at least some of the dots from a first halftoning technique (figure 5 and column 6, lines 34-40 of Rylander). Thinning of a halftone cell produces complete lightening of colorant values for at least some areas of at least some of the dots from a first halftoning technique.

Spence and Rylander are combinable because they are from the same field of endeavor, namely digital image data halftoning and processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to thin the inside of a halftone dot. The motivation for doing so would have been to enable higher addressability for an inkjet printer while preventing problems of over-inking that tend to occur in inkjet printing (column 2, lines 28-34 of Rylander). Therefore, it would have been obvious to combine Rylander with Spence to obtain the invention as specified in claim 29.

Regarding claims 14 and 31: Spence discloses that the step of applying a first halftoning technique employs dots (column 13, lines 35-38 of Spence). As is well-known in the art, halftone screening employs dots.

Spence further discloses that the step of applying a second halftoning technique causes the creation of a plurality of areas of a same color within at least some of the dots from the first halftoning technique (column 13, lines 39-48 of Spence). For any non-white color, areas of same color are produced based on the primary color separations (CMYK) (column 13, lines 39-48 of Spence).

Regarding claim 32: Spence discloses a proof generation apparatus for proof printers (figure 1 of Spence), comprising a print data input (figure 1(100→110) of Spence) responsive to a first halftone processor (figure 1(110) of Spence) employing a first halftone technique (column 13, lines 31-35 of Spence), wherein the first halftoning technique is at least comparable to a target halftoning technique used by the target halftone printing press (figure 1(168) of Spence) (column 13, lines 35-38 and lines 42-45 of Spence). The set of digital color separations (figure 1(110) of Spence) is a halftone technique since the color separated data is used directly in direct digital color proofing (column 13, lines 35-39 and lines 42-45 of Spence). Said digital color separations are used in forming the set of halftone separations (figure 1(120) of Spence) (column 13, lines 42-45 of Spence), so said digital color separations is at least comparable to said halftone separations.

Spence further discloses embodied lightening logic (figure 3(320(associated embodied code)) of Spence) for lightening at least one portion of each of at least some of the screen dots (column 19, lines 3-6 of Spence). Since the appearance match proofer calibration system (figure 1(180) of Spence) matches for the lightness coordinate of the image (column 19, lines 3-6 of Spence), then in general said calibration system will lighten at least one portion of each of at least some of the screen dots.

Spence further discloses an adder (figure 3(320(associated embodied code)) of Spence) for adding at least one region of a second color in some of the screen dots (column 19, lines 6-9 of Spence). Since said calibration system matches for the hue angle (column 19, lines 6-9 of Spence), at least one region of a

second color will be added in some of the screen dots in order to correct the hue of the proofing image.

In order to perform image processing functions, a computer (figure 3(320) of Spence) must inherently comprise some form of software code embodied on some form of computer-readable medium. The lightening logic is the software code, embodied on a computer-readable medium, that performs the lightening. The adder is the software code, embodied on a computer-readable medium, that performs the adding. Said lightening logic and said adder are therefore separate and distinct components.

Spence further discloses a processed print data output (figure 1(153) of Spence) (column 14, lines 32-40 of Spence).

Spence does not disclose expressly lightening at least one portion of each of at least some of the screen dots *inside their edges;* and that said proof printers are ink jet printers.

Rylander discloses lightening at least one portion of each of at least some of the screen dots inside their edges (figure 5 and column 6, lines 36-40 of Rylander); and printing using ink jet printers (column 4, lines 32-36 of Rylander). The inside of the dot is lightened ("thinned"), whereas the edge of the dot is not lightened ("unthinned") (column 6, lines 36-40 of Rylander).

Spence and Rylander are combinable because they are from the same field of endeavor, namely digital image data halftoning and processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use an ink jet printer for a proofing printer. The suggestion for doing so would have been that inkjet printers are an alternate means by which halftone dots are printed. Furthermore, as is well-known in the art, inkjet printers are cheaper and more readily available than most other printers, such as laserjet

printers. Additionally, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to thin the inside of a halftone dot without thinning the edge of the halftone dot. The motivation for doing so would have been to enable higher addressability for an inkjet printer while preventing problems of over-inking that tend to occur in inkjet printing (column 2, lines 28-34 of Rylander). Therefore, it would have been obvious to combine Rylander with Spence to obtain the invention as specified in claim 32.

Regarding claims 34 and 41: Spence discloses a proof generation apparatus for proof printers (figure 1 of Spence), comprising means for receiving print data (figure 1(100→110) of Spence) to be printed on a target halftone printing press (figure 1(168) of Spence) to which a first halftone technique has been applied (column 13, lines 31-35 of Spence), wherein the first halftoning technique produces a plurality of dots and is at least comparable to a target halftoning technique used by the target halftone printing press (column 13, lines 35-38 and lines 42-45 of Spence). A halftoning technique, such as said first halftoning technique, *by definition* produces a plurality of dots. The set of digital color separations (figure 1(110) of Spence) is a halftone technique since the color separated data is used directly in direct digital color proofing (column 13, lines 35-39 and lines 42-45 of Spence). Said digital color separations are used in forming the set of halftone separations (figure 1(120) of Spence) (column 13, lines 42-45 of Spence), so said digital color separations is at least comparable to said halftone separations.

Spence further discloses means (figure 1(180) of Spence) for altering at least a plurality of areas distributed within at

least some of the dots with substantially the same color alteration (column 19, lines 3-9 of Spence). By matching the hue angle, instead of the individual hues of individual dots, in different regions of the image (column 19, lines 3-9 of Spence), a plurality of areas are altered within at least some of the dots with substantially the same color alteration.

Spence further discloses means (figure 1(110) of Spence) for providing the data to a proofing printer (figure 1(140) of Spence) different from the target halftone printing press (figure 1(168) of Spence). Said target halftone printing press uses a separate halftoning technique to form image data and a set of printing plates (column 13, lines 45-50 of Spence) in order to form the printed images (column 13, lines 50-54 of Spence). Said proofing printer uses a direct digital color proofing method (column 13, lines 42-43 of Spence). Therefore, said printing proofer and said target halftone printing press are different.

Spence does not disclose expressly that said altered areas are distributed *within the edges* of at least some of the dots.

Rylander discloses altering areas that are distributed within the edges of at least some halftone dots (figure 5 and column 6, lines 36-40 of Rylander). The inside of the dot is altered ("thinned"), whereas the edge of the dot is not altered ("unthinned") (column 6, lines 36-40 of Rylander).

Spence and Rylander are combinable because they are from the same field of endeavor, namely digital image data halftoning and processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to thin (and thus alter) the inside of a halftone dot without thinning the edge of the halftone dot. The motivation for doing so would

have been to enable higher addressability for an inkjet printer while preventing problems of over-inking that tend to occur in inkjet printing (column 2, lines 28-34 of Rylander). Therefore, it would have been obvious to combine Rylander with Spence to obtain the invention as specified in claims 34 and 41.

Further regarding claim 34: The apparatus of claim 41 performs the method of claim 34.

Regarding claim 35: Spence discloses that the step of altering alters the areas to include a same color that is different from the color of the dot (figure 2 and column 19, lines 6-9 and lines 18-23 of Spence). By adjusting the hue angle to create an appearance match (column 19, lines 6-9 of Spence), areas are altered to a same color that is different from the color of the dot (column 19, lines 18-23 of Spence).

Regarding claim 36: Spence discloses that the step of altering operates according to a set of primary colors (column 19, lines 3-4 of Spence). Said set of primary colors are adjusted to make highlights appear bright (column 19, lines 9-13 of Spence). In order to adjust a set of primary color to make highlights appear bright, a first color would have to be altered by a second color in favor of a decrease in the altering of the first color by a third color that is darker than the second color. Such an adjustment would inherently increase the lightness of the highlight portion of the image.

Regarding claim 37: Spence discloses that the step of altering alters the areas to lighten the color of the dot (column 19, lines 3-6 of Spence). By altering the lightness of the image data (column 19, lines 3-6 of Spence) to match the print data (column 19, lines 9-13 of Spence), the color of the dots of some areas will be lightened.

Regarding claim 38: Spence discloses that the step of altering alters dots corresponding to a spot color defined by the print data to match the spot color (column 19, lines 3-9 of Spence). By modifying the hue angle (column 19, lines 6-9 of Spence) to match the print data (column 19, lines 13-17 of Spence), dots corresponding to a spot color defined by the print data will be altered to match the spot color.

Regarding claim 39: Spence discloses including the step of printing the data with a proofing printer different from the target halftone printing press (figure 1(153) of Spence) (column 14, lines 32-40 of Spence). As discussed in the arguments regarding claims 34 and 41, said proofing printer is an ink jet proofing printer.

Regarding claim 40: Spence discloses a proof generation apparatus for proof printers (figure 1 of Spence), comprising a print data input (figure 1(100→110) of Spence) responsive to a first halftone processor (figure 1(110) of Spence) employing a first halftone technique (column 13, lines 31-35 of Spence), wherein the first halftoning technique produces a plurality of dots and is at least comparable to a target halftoning technique used by the target halftone printing press (figure 1(168) of Spence) (column 13, lines 35-38 and lines 42-45 of Spence). A halftoning technique, such as said first halftoning technique, *by definition* produces a plurality of dots. The set of digital color separations (figure 1(110) of Spence) is a halftone technique since the color separated data is used directly in direct digital color proofing (column 13, lines 35-39 and lines 42-45 of Spence). Said digital color separations are used in forming the set of halftone separations (figure 1(120) of Spence) (column 13, lines 42-45 of Spence), so said digital

color separations is at least comparable to said halftone separations.

Spence further discloses embodied altering logic (figure 1 (180) of Spence) for altering at least a plurality of areas distributed within at least some of the dots with substantially the same color alteration (column 19, lines 3-9 of Spence). By matching the hue angle, instead of the individual hues of individual dots, in different regions of the image (column 19, lines 3-9 of Spence), a plurality of areas are altered within at least some of the dots with substantially the same color alteration.

Spence further discloses that said apparatus further comprises a processed print data output (figure 1(153) of Spence) (column 14, lines 32-40 of Spence).

Spence does not disclose expressly that said altered areas are distributed *within the edges* of at least some of the dots.

Rylander discloses altering areas that are distributed within the edges of at least some halftone dots (figure 5 and column 6, lines 36-40 of Rylander); and printing using ink jet printers (column 4, lines 32-36 of Rylander). The inside of the dot is altered ("thinned"), whereas the edge of the dot is not altered ("unthinned") (column 6, lines 36-40 of Rylander).

Spence and Rylander are combinable because they are from the same field of endeavor, namely digital image data halftoning and processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to thin (and thus alter) the inside of a halftone dot without thinning the edge of the halftone dot. The motivation for doing so would have been to enable higher addressability for an inkjet printer while preventing problems of over-inking that tend to occur in

inkjet printing (column 2, lines 28-34 of Rylander). Therefore, it would have been obvious to combine Rylander with Spence to obtain the invention as specified in claim 40.

9. Claims 2, 4, 10, 12-13, 15 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spence (US Patent 5,333,069) in view of Rylander (US Patent 5,602,572) and Vinck (US Patent 5,953,988).

Regarding claim 2: Spence discloses printing using a first halftone technique (column 13, lines 31-35 of Spence) and a second halftone technique (column 13, lines 42-50 of Spence).

Spence in view of Rylander does not disclose expressly that said first halftoning technique applies a halftoning technique that employs constantly spaced dots of variable sizes and said second halftoning technique applies a stochastic halftoning technique to the constantly spaced dots of variable sizes.

Vinck discloses a halftoning technique that employs constantly spaced dots of variable sizes (figure 2(24) and column 4, lines 47-49 of Vinck) and a stochastic halftoning technique (figure 2(25) and column 4, lines 49-50 of Vinck), wherein the dots of said stochastic halftoning technique are equally sized (column 4, lines 50-52 of Vinck).

Spence in view of Rylander is combinable with Vinck because they are from the same field of endeavor, namely halftone processing of image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a halftoning technique that employs constantly spaced dots of variable size for the first halftoning technique and a stochastic halftoning technique for the second halftoning technique. The motivation for doing so would have been to

create various shades of color (column 3, lines 29-37 of Vinck). Therefore, it would have been obvious to combine Vinck with Spence in view of Rylander to obtain the invention as specified in claim 2.

Regarding claim 4: Spence discloses that the step of applying a first halftoning technique employs dots from a first set of primary colors (column 13, lines 39-41 of Spence) and the step of applying a second halftoning technique (column 13, lines 42-45 of Spence).

Spence in view of Rylander does not disclose expressly that applying said second halftoning technique adds at least a second of the primary colors to a portion of one or more of the dots assigned to a first of the primary colors based on the first halftoning technique.

Vinck discloses that said first halftoning technique employs constantly spaced dots of variable sizes (figure 2(24) and column 4, lines 47-49 of Vinck) and said second halftoning technique is a stochastic halftoning technique (figure 2(25) and column 4, lines 49-50 of Vinck), the dots of said stochastic halftoning technique being of equal size (column 4, lines 50-52 of Vinck). Said first halftoning screen and said second halftoning screen both use sets of primary colors (column 5, lines 16-19 of Vinck). With a constantly spaced halftoning screen with dots of variable sizes used in conjunction with a stochastic halftoning screen with dots of equal size, dots of different primary colors will inherently overlap each other in some areas of the image. Therefore, at least a second of the primary colors is added to a portion of one or more of the dots assigned to a first of the primary colors based on the first halftoning technique.

Spence in view of Rylander is combinable with Vinck because they are from the same field of endeavor, namely halftone processing of image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use two different halftone screens to add primary colors from the second halftone screen to a portion of a primary color of the first halftone screen. The motivation for doing so would have been to extend the printable color gamut (column 5, lines 22-24 of Vinck). Therefore, it would have been obvious to combine Vinck with Spence in view of Rylander to obtain the invention as specified in claim 4.

Regarding claim 10: Said first halftoning technique employs constantly spaced dots of variable sizes and said second halftoning technique is a stochastic halftoning technique, the dots of said stochastic halftoning technique being of equal size, as discussed in the arguments regarding claim 2 which are incorporated herein.

In a stochastic halftoning technique, the areas in which ink is not printed will inherently overlap the areas in which ink is printed in a halftoning technique that employs constantly spaced dots of variable sizes, as can be seen by comparing the halftone patterns of figure 2(24) and figure 2(25) of Vinck. Preventing the printing of ink will therefore inherently lighten colorant values for at least some areas of at least some of the dots from said first halftoning technique.

Regarding claim 12: Said first halftoning technique employs constantly spaced dots of variable sizes and said second halftoning technique is a stochastic halftoning technique, the dots of said stochastic halftoning technique being of equal size, as discussed in the arguments regarding claim 2 which are

incorporated herein. Both halftoning techniques use sets of primary colors (column 13, lines 39-41 of Spence).

Since the dot sizes for the constantly spaced halftone screen are variable and the dot sizes for the stochastic halftone screen are constant, at a particular grayscale level for each color, said grayscale level depending on the size of the dots of said stochastic halftoning technique, no printing will occur in an area for one primary color of the first halftone screen and printing will occur in the same area for another primary color of the second halftone screen, thus substituting the colors. The area in which nothing is printed for the first halftone screen will coincide with and be equal to the area in which a dot is printed for the second halftone screen. Therefore, applying said second halftoning technique to said first halftoning technique will inherently cause the substitution of colorant from at least some areas of at least some of the dots from the first halftoning technique with a different colorant.

Regarding claims 13 and 30: Spence discloses that the step of applying a first halftoning technique employs dots (column 13, lines 35-38 of Spence). As is well-known in the art, halftone screening employs dots.

Spence in view of Rylander does not disclose expressly that the step of applying a second halftoning technique causes the overlaying of colorant from at least some areas of at least some of the dots from the first halftoning technique with a different colorant.

Vinck discloses overlaying colorant from at least some areas of at least some of the dots from a first halftoning

technique with a different colorant (figure 4; column 4, lines 59-61; and column 5, lines 30-33 of Vinck).

Spence in view of Rylander is combinable with Vinck because they are from the same field of endeavor, namely digital image data halftoning and processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to overlay different colorants. The motivation for doing so would have been to produce a larger variety of colors (column 5, lines 30-33 of Vinck). Therefore, it would have been obvious to combine Vinck with Spence in view of Rylander to obtain the invention as specified in claims 13 and 30.

Regarding claim 15: Said first halftoning technique employs constantly spaced dots of variable sizes and said second halftoning technique is a stochastic halftoning technique, the dots of said stochastic halftoning technique being of equal size, as discussed in the arguments regarding claim 2 which are incorporated herein. Both halftoning techniques use sets of primary colors (column 13, lines 39-41 of Spence).

Color halftoning inherently creates a plurality of areas as individual pixels since color halftoning uses a plurality of dots at specific locations to represent an image. Therefore, applying said first halftoning technique and said second halftoning technique inherently causes the creation of a plurality of areas as individual pixels.

10. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spence (US Patent 5,333,069) in view of Rylander (US Patent 5,602,572), Vinck (US Patent 5,953,988) and Gondek (US Patent 5,949,965).

Regarding claims 5 and 6: Spence discloses the step of applying a first halftoning technique (figure 1(110) of Spence) that employs dots from a first set of primary colors (column 13, lines 39-45 of Spence) and the step of applying a second halftoning technique (figure 1(120) and column 13, lines 35-39 of Spence).

Spence in view of Rylander does not disclose expressly that the step of applying said second halftoning technique adds at least a first additional color to a portion of one or more of the dots assigned to a first of the primary colors based on the first halftoning technique.

Vinck discloses applying a halftone screen with constantly spaced, variable sized dots (figure 2(24) of Vinck) and a stochastic halftone screen (figure 2(25) of Vinck) with constant sized dots (column 4, lines 46-54 of Vinck).

Spence in view of Rylander is combinable with Vinck because they are from the same field of endeavor, namely halftone processing of image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use halftone screen with constantly spaced, variable sized dots for the first halftoning technique and the stochastic halftone screen for the second halftone technique. The motivation for doing so would have been to extend the printable color gamut (column 5, lines 22-24 of Vinck). Therefore, it would have been obvious to combine Vinck with Spence in view of Rylander.

With a constantly spaced halftoning screen with dots of variable sizes used in conjunction with a stochastic halftoning screen with dots of equal size, dots of different primary colors will inherently overlap each other in some areas of the image.

Therefore, at least one color will be added to a portion of one or more of the dots assigned to a first of the primary colors based on the first halftoning technique.

Spence in view of Rylander and Vinck does not disclose expressly that said one color that will be added is an additional color that will added to a first of the primary colors based on the first halftoning technique.

Gondek discloses printing additional color planes as part of the available color palette (column 7, lines 1-4 of Gondek).

Spence in view of Rylander and Vinck is combinable with Gondek because they are from the same field of endeavor, namely halftone printing and image processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include an additional color as part of the color palette for the second halftoning technique. The motivation for doing so would have been to have more colors with which to reproduce a desired tone (column 7, lines 1-4 of Gondek). Therefore, it would have been obvious to combine Gondek with Spence in view of Rylander and Vinck to obtain the invention as specified in claims 5 and 6.

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spence (US Patent 5,333,069) in view of Rylander (US Patent 5,602,572) and Caruthers (US Patent 5,899,605).

Regarding claim 16: Spence in view of Rylander does not disclose expressly receiving spot color print data for a same print job for which the primary color print data is received, and wherein the step of applying a first halftoning technique is

applied to the spot color print data in addition to the primary color data.

Caruthers discloses processing spot color print data for a same print job for which the primary color print data is received (column 2, lines 45-51 of Caruthers), and wherein the step of applying a first halftoning technique (column 2, lines 26-31 of Caruthers) is applied to the spot color print data in addition to primary color data (column 2, lines 47-54 of Caruthers). The "process color" images mentioned in Caruthers are images that are processed using halftone techniques (column 2, lines 26-31 of Caruthers). However, the image is first processed for spot colors (column 2, lines 45-54 of Caruthers).

Spence in view of Rylander is combinable with Caruthers because they are from the same field of endeavor, namely color image data halftoning. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to first process for spot colors, as taught by Caruthers, thus receiving spot color print data for the same print job which is received and halftoned as taught by Spence. The motivation for doing so would have been to provide better color rendering for specific, non-primary colors that the user considers important in the printed color image. Therefore, it would have been obvious to combine Caruthers with Spence in view of Rylander to obtain the invention as specified in claim 16.

12. Claims 27 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spence (US Patent 5,333,069) in view of Rylander (US Patent 5,602,572) and obvious engineering design choice.

Regarding claim 27: Spence does not disclose expressly that said first halftoning technique, said step of lightening, and said step of adding are applied as part of a single simultaneous process before the step of providing.

To a person of ordinary skill in the art at the time of the invention, it would have been an obvious design choice to perform the aforementioned steps of applying, lightening and adding as part of a single simultaneous process since performing said steps simultaneously would increase the efficiency with which the halftone image data is processed. The processes of applying, lightening and adding are performed on each pixel of the image data as part of an overall printing and proofing process. It would therefore be obvious to perform the steps of applying, lightening and adding simultaneously and thus increase the efficiency of the printing and proofing process.

Regarding claim 42: Spence does not disclose expressly that said step of receiving, said step of applying a second halftoning technique, and/or said step of applying said first halftoning technique are at least partially combined such that the steps of applying the first and second techniques overlap at least in part.

However, the steps of receiving, applying said first halftoning technique, and applying said second halftoning technique are each performed in sequence one pixel at a time, as is traditionally and commonly performed in the art when halftone processing is performed using sequential or parallel processing computer systems. Therefore, it would have been an obvious engineering design choice to at least partially combine said step of receiving, said step of applying a second halftoning technique, and/or said step of applying said first halftoning

technique, such that the steps of applying the first and second techniques overlap at least in part. For example, first the first pixel is received. Then, after the first pixel is received, it is processed by the first halftoning technique while a second pixel is received. Then, said first pixel is processed by said second halftoning technique while said second pixel is processed by said first halftoning technique and a third pixel is received.

It would be obvious to at least partially combine the aforementioned steps as demonstrated above since doing so would increase the efficiency and throughput of the printing and proofing process, which is generally a desirable result.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Thompson whose telephone number is 571-272-7441. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James A. Thompson
Examiner
Division 2625

14 February 2006

DAVID MOORE
SUPERVISORY PATENT EXAMINER
CENTER 2600